Geological Sciences
San Diego State University
5500 Campanile Drive
San Diego, CA 92182-1020
Tel: 619 – 594 – 5586
Fax: 619 – 594 – 4372
www.geology.sdsu.edu

SAN DIEGO STATE UNIVERSITY

May 22, 2017

Richard Greenwood
California State Lands Commission
200 Oceangate, 12th floor
Long Beach, CA 90802-4331

Dear Mr. Greenwood,

I'm writing in accordance with the California State Lands Commission Geophysical Survey Permit No. 9307, to notify you of upcoming survey operations in the vicinity of the northern Channel Islands. Surveys will be conducted from June 18-27, 2017, between 7 am and 7 pm daily, aboard Scripps Institution of Oceaongraphy's R/V *Sproul*. The survey will include high-resolution sub-bottom sonar. Please note that the survey will not take place in any MPAs.

Please find included in this notification package:

1. Exhibit F (Pages 1-3)
2. Exhibit G (Pages 4-5)
3. Survey Location Map (Page 6)
4. Survey Coordinate Tables (Pages 7-10)
5. U.S. Coast Guard Local Notice to Mariners (Page 11)
6. Harbormaster and Dive shop notifications (Pages 12-13)
7. Marine Wildlife Contingency Plan (Pages 14-24)
    a. Appendix A: MWM Certifications (Pages 25)
    b. Appendix B: MWM Trainer resume & certification (Page 26-28)
    c. Appendix C: Example Datasheets (Pages 29-30)
8. Oil Spill Contingency Plan (Pages 31-32)
9. Verification of Equipment Service/Maintenance (Pages 33)
10. Copy of CINMS permit (Pages 34-39)
11. Exhibit H (Pages 40-48)

Please don't hesitate to contact me for more information.

Sincerely,

Jillian M. Maloney
San Diego State University

EXHIBIT F

PRESURVEY NOTIFICATION FORM

Applicant/Permittee's Mailing Address:
David Ball
Bureau of Ocean Energy Management
760 Paseo Camarillo, Suite 102
Camarillo, CA 93010

Date: 5/22/17
Jurisdiction: Federal ____ State ____ Both _X_
If Sate: Permit #PRC 9307
Region: II
Area: Northern Channel Islands, CA

GEOPHYSICAL SURVEY PERMIT

Check one: ___X___New survey _____ Time extension of a previous survey

Bureau of Ocean Energy Management with San Diego State University (Applicant/Permittee) will conduct a geophysical survey offshore California in the survey area outlined on the accompanying navigation chart. If you foresee potential interference with commercial fishing or other activities, please contact the person(s) listed below:

FEDERAL WATERS (outside 3 nautical miles)

1) Applicant's representative
2) Federal representative (e.g., Bureau of Ocean Energy Management [BOEM] or National Science Foundation [NSF])

NOTE: Any comments regarding potential conflicts in Federal waters must be received by the Applicant's Representative and lead Federal agency within ten (10) days of the receipt of this notice.

STATE WATERS (Inside 3 nautical miles)

1) Permittee's representative
2) CSLC representative

NOTE: Any comments regarding potential conflicts in State waters should be received as soon as possible by the Permittee's representative, no more than fifteen (15) days after the receipt of this notice.

1. Expected Date of Operation June 18-27, 2017

EXHIBIT F

2. Hours of Operation 7am to 7pm
3. Vessel Name R/V Sproul
4. Vessel Official Number (California State ID#): CF2166XS
5. Vessel Radio Call Sign: WSQ2674
6. Vessel Captain's Name: Christopher Welton
7. Vessel will monitor Radio Channel(s) VESSEL MONITORS STANDARD MARINE FREQUENCIES UNDERWAY (VHF CHANNELS 16 & 13)
8. Vessel Navigation System: listed below

    - GPS Trimble Tansmon P-Code
    - GPS Trimble NT 300 DGPS
    - RADAR Furuno 3cm(2)
    - ADU GPS Ashtech Attitude-sensing System
    - Fathometer Furuno FCV 382 50/200 KHz
    - Gyro - Sperry MK 37(2)
    - Autopilot - ROBERTSON

9. Equipment to be used:

1. Knudsen 3.5 kHz sub-bottom profiler
    a. Frequency (Hz, kHz) 3.5 / 12 kHz
    b. Source level (dB re 1 μPa at 1 meter (m) [root mean square (rms)]): 222 dB
    c. Number of beams, across track beamwidth, and along track beamwidth :

    1 beam, variable width

    d. Pulse rate and length: Pulse rate of 1 per second and length up to 64 ms
    e. Rise time NA, hull-mounted
    f. Estimated distances to the 190 dB, 180 dB, and 160 dB re 1 μPa (rms) isopleths

    190 dB – 30 m; 180 dB – 70 m; 160 dB – 220 m

    g. Deployment depth: hull-mounted
    h. Tow speed ~4-6 kts
    i. Approximate length of cable tow NA – hull mounted

EXHIBIT F (supplemental)
GEOPHYSICAL SURVEY PERMIT

1. Expected Date of Operation. June 18-27, 2017
2. Hours of Operation 7am to 7pm
3. Vessel Name R/V *Sproul*
4. Vessel Official Number CF2166XS
5. Vessel Radio Call Sign. WSQ2674
6. Vessel Captain's Name. Christopher Welton
7. Vessel will monitor Radio Channel(s) Vessel monitors standard marine frequencies underway (VHF Channels 16 & 13)
8. Vessel Navigation System. Listed below

   * GPS Trimble Tansom P-Code
   * GPS Trimble NT 300 DGPS
   * RADAR Ruruno 3cn(2)
   * ADU GPS Ashtech Attitude-sensing System
   * Fathometer Furuno FCV 382 50/200 kHz
   * Gyro – Sperry MK 37(2)
   * Autopiolot - ROBERTSON

9. Equipment to be used Kongsberg Mesotech single beam sector sonar model 1171
   a. Frequency (Hz, kHz) 675 kHz
   b. Source level (dB re 1 µPa at 1 meter (m) [root mean square (rms)]) 221
   c. Number of beams, across track beamwidth, and along track beamwidth single beam, @ 675 kHz is 0.9° x 30° (H x V)
   d. Pulse rate and length. 100uS
   e. Rise time
   f. Estimated distances to the 190 dB, 180 dB, and 160 dB re 1 µPa (rms) isopleths
      190 - 20m; 180db - 40m; 160db - 100m (Francois and Garrison model)
   g. Deployment depth 10 – 70 m
   h. Tow speed N/A, this is a stationary unit deployed and retrieved from the vessel.
   i. Approximate length of cable tow N/A

1171-Series Scanning Sonar
High Resolution Remote Switchable Fan/Conical Beam Transducer
Internal Compass

(*SEACON 4-pin, RMG/XSG Series Connector* configuration)

KONGSBERG

P/N 975-23150000

This version of the 1171-series sonar head has been specifically designed to produce the highest resolution, scanning sonar images possible with 675 kHz. Its design is targeted at bottom clearance, body recovery, underwater construction support, pipeline and cable surveys, bridge and pier inspection, and applications where data clarity supersedes any other requirement. The exposed transducer design is ideal for all water temperatures, and its beam pattern is not affected by thermal defocusing. The dual transducer arrangement is ***ideal for both imaging and profiling applications***. The internal compass module also contains pitch and roll sensors, and the data is displayed on the sonar image, and is time-tag recorded with the sonar data. This head is operated using the MS 1000 software.

Operating Frequency:	675 kHz	
Beam Width:	Nominally 30° vertical X 0.9° horizontal fan/1.7° conical	
Range:	0.5 - 100 m typical (@675kHz); 150 m obtainable	
Range Resolution:	≥ 7.5mm @10μs pulse length @ 1500m/s speed of sound	
Range Sampling:	≥1mm	
Scan Speed:	nom 8 sec/360° @ 10 m and 1.8° step size (@ 460 kbits/sec.) nom 18 sec/360° @ 50m and 1.8° step size (@ 460 kbits/sec.)	
Scan Angle:	360° continuous and user-sectored	
Step Size:	0.225° - 7.2° user-selectable	
Transmit Pulse Widths:	0 to 2500μs (manual or auto-selected for optimized operation)	
Receive Bandwidth:	200kHz max. (auto selected to suit pulse length & sample rate)	
Telemetry :	RS485 or RS232 asynchronous serial data	
Telemetry configurations:	Legacy mode	Downlink: 9600 bps fixed Uplink : 9600 bps to 460 kbps (auto set to highest rate allowed by the quality of the telemetry link)
	Fixed	Downlink: 9600 bps to 460 kbps (user selected for compatibility with other serial communication equipment) Uplink: same speed as downlink
	Optimized	Downlink: 9600 bps to 460 kbps (auto set to highest rate allowed by the quality of the telemetry link) Uplink: same speed as downlink
Power Requirement:	22-60 VDC, 30W	
Temperature Range:	-10 to +40°C operating -30 to +40°C storage	
Operating Depth:	3000 m	
Weight in Air:	14.5lb/6.5kg (estimated)	
Weight in Water:	7.3lb/3.3kg (estimated)	
Connector:	Seacon 4-pin, RMG/XSG Series Connector	
Materials	Aluminum 6061-T6, 300-Series SS	
Compass sensor specifications:	See Compass specification sheet	

KONGSBERG MESOTECH LTD. 1598 Kebet Way, Port Coquitlam B.C. Canada V3C 5M5
Tel: (604) 464 8144 Fax: (604) 941 5423

P/N 975-23150000

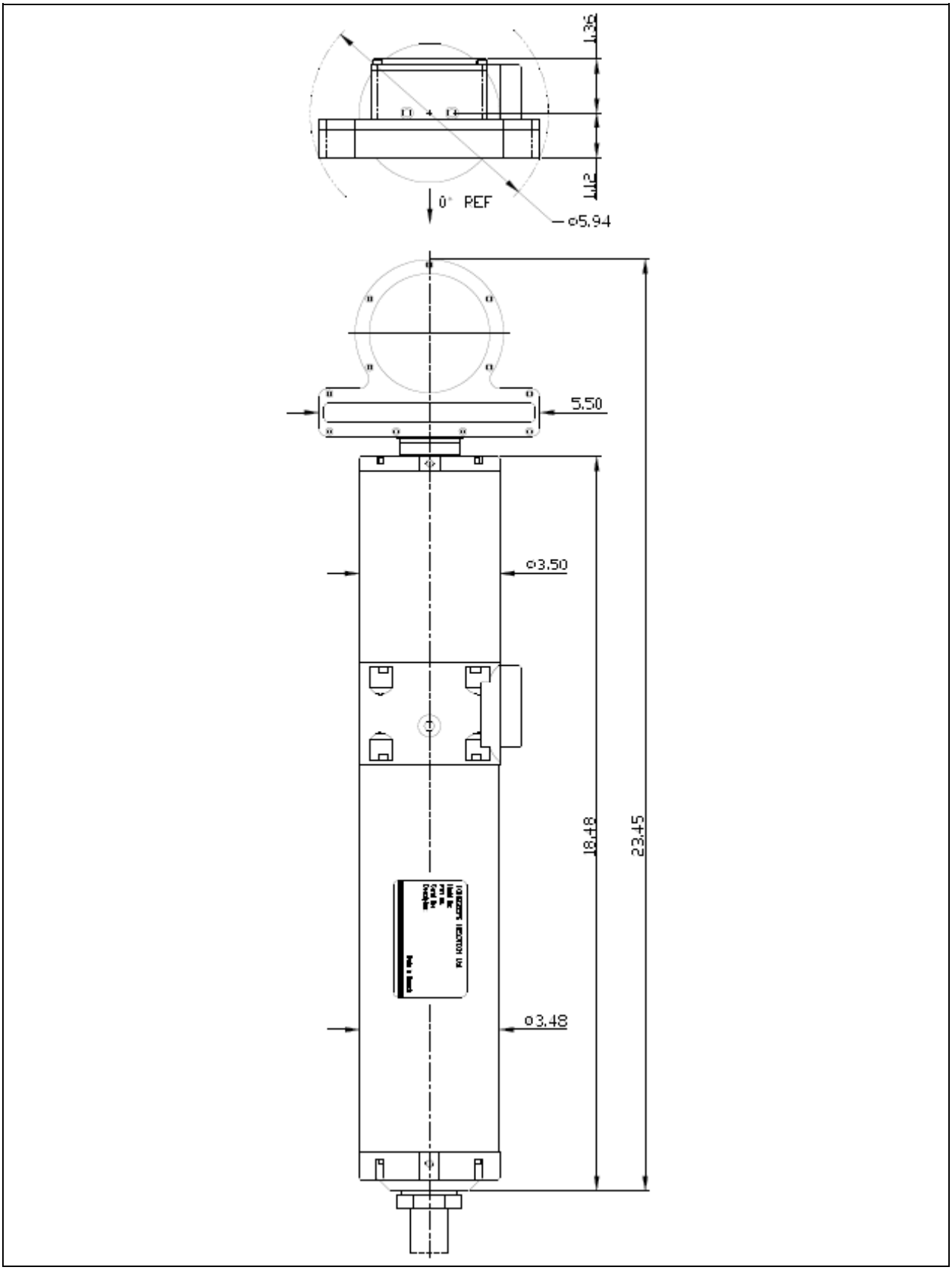

EXHIBIT F

Applicants Representative:
Dave Ball
Bureau of Ocean Energy Management
760 Paseo Camarillo, Suite 102
Camarillo, CA 93010
805-384-6340

California State Lands Representative
Richard B. Greenwood
Statewide Geophysical Coordinator
200 Oceangate, 12th Floor
Long Beach, CA 90802-4331
(562) 590-5201

BOEM Representatives:
Joan Barminski
Regional Supervisor
Office of Strategic Resources
770 Paseo Camarillo
Camarillo, CA 93010

David Ball
Preservation Officer
760 Paseo Camarillo
Camarillo, Ca. 93010
(805) 384-6340

EXHIBIT G

California State Lands Commission Presurvey Notice Requirements for Permittees to Conduct Geophysical Survey Activities

All parts of the Presurvey Notice must be adequately filled out and submitted to the CSLC staff a minimum of twenty-one (21) calendar days prior to the proposed survey date to ensure adequate review and approval time for CSLC staff. Note that one or more of the items may require the Permittee to plan well in advance in order to obtain the necessary documentation prior to the Notice due date (e.g., permits from other State or Federal entities).

Please use the boxes below to verify that all the required documents are included in the Presurvey Notice. If "No" is checked for any item, please provide an explanation in the space provided. If additional space is needed, please attach separate pages.

Yes	No	
☒	☐	Geophysical Survey Permit Exhibit F
☒	☐	Survey Location (including a full-sized navigation chart and GPS coordinates for each proposed track line and turning point): Explanation:
☒	☐	Permit(s) or Authorization from other Federal or State agencies (if applicable) Explanation: Permit from Channel Island Marine Sanctuary is included (Pages 36-46).
☒	☐	21-Day Written Notice of Survey Operations to Statewide Geophysical Coordinator/
☒	☐	U.S. Coast Guard Local Notice to Mariners
☒	☐	Harbormaster and Dive Shop Notifications Explanation:
☒	☐	Marine Wildlife Contingency Plan Explanation:
☒	☐	Oil Spill Contingency Plan Explanation:
☐	☒	Verification of California Air Resources Board's Tier 2-Certified Engine Requirement Explanation: Engines compliant with MARPOL 73/78 (IMO), Annex VI NOx Limits, EPA Tier II and consume less than 790 gallons daily, meeting Santa Barbara County

☒ ☐ Verification of Equipment Service and/or Maintenance (must verify sound output)
Explanation:

☐ ☒ Permit(s) or Authorization from California Department of Fish and Wildlife for surveys in or affecting Marine Protected Area(s) (if applicable)
Explanation: Surveys do not extend into any Marine Protected Areas

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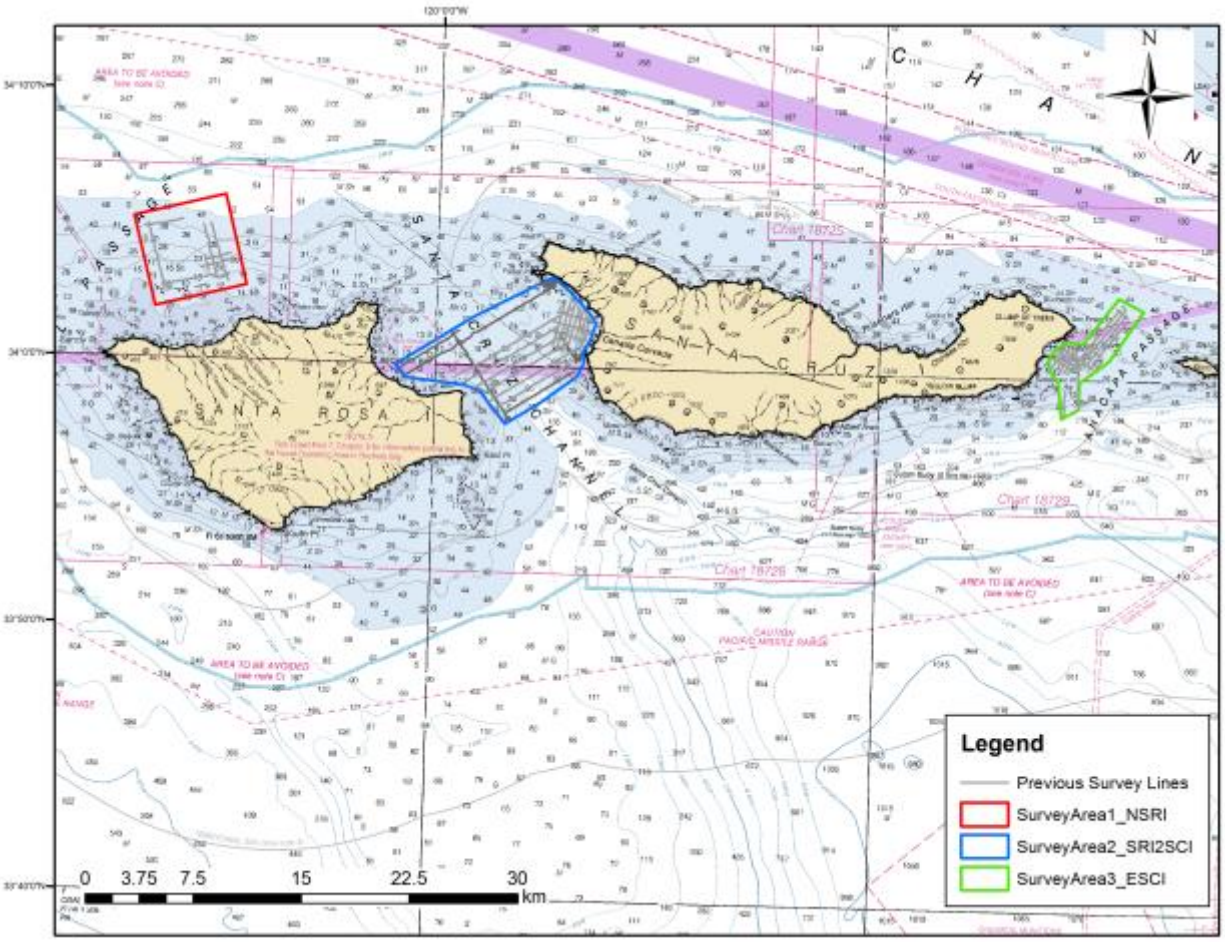
NOTE: CSLC staff will also require verification that current biological information was obtained and transmitted as outlined in Section 5 of this permit.

Jillian Maloney (SDSU) contacted Dan Lawson (562-980-3209) at the NOAA Long Beach office on May 3, 2017 regarding marine mammal activity within the survey area to inquire about recent unusual marine wildlife activity in the area of planned survey.



Map 1: The above map shows the planned survey areas. Survey lines will be placed within each of the areas. These locations will be chosen based on an ongoing analysis of the previous survey lines mapped in gray and need for updated survey data prior to coring. See Table 1 for previous survey line coordinates. Survey will not be conducted within any MPAs.

Table 1: The table below shows the start and end points in geographic decimal degrees for each of the previous survey lines line shown in the above map.

Start Latitude	Start Longitude	End Latitude	End Longitude	Length (km)
34.015433	-119.890168	34.032007	-119.885138	1.997
34.032547	-119.887467	34.016023	-119.892642	2.007
34.016373	-119.895913	34.036340	-119.890152	2.382
34.036942	-119.893000	34.014522	-119.900553	2.742
34.012072	-119.905322	34.040225	-119.896418	3.401
34.040987	-119.899707	34.012410	-119.908837	3.481
34.013505	-119.912368	34.041943	-119.903792	3.464
34.034825	-119.909683	34.029353	-119.883625	2.510
34.023575	-119.886930	34.029145	-119.912873	2.532
34.023578	-119.915005	34.017488	-119.887337	2.689
34.021427	-119.888883	34.038308	-119.894580	2.104
34.037930	-119.897118	34.011247	-119.947850	5.674
34.011640	-119.947867	33.993313	-119.982405	3.917
33.989257	-119.977392	34.025752	-119.907925	7.762
34.023132	-119.900195	33.986225	-119.969823	7.815
33.983923	-119.961312	33.999343	-119.932242	3.271
34.001387	-119.928662	34.016353	-119.900097	3.210
34.010688	-119.897395	33.977680	-119.958820	6.922
33.974043	-119.953823	34.002132	-119.907112	6.932
34.050052	-119.920230	34.051997	-119.912938	0.723
34.051248	-119.925357	34.053983	-119.913150	1.207
34.051485	-119.919645	34.053095	-119.913020	0.649
34.052473	-119.917577	34.053763	-119.911800	0.562
34.051398	-119.911327	34.049848	-119.918830	0.731
34.051663	-119.918488	34.053417	-119.911100	0.717
34.049800	-119.912142	34.049718	-119.918277	0.571
34.051582	-119.917203	34.052957	-119.910953	0.605
34.049153	-119.915250	33.996723	-120.015005	11.290
33.996712	-120.015038	33.993192	-120.022217	0.784
33.997985	-120.025763	34.021382	-119.982763	4.988
34.020032	-119.987580	33.967285	-119.944058	7.368
33.970927	-119.946320	33.997733	-119.895833	5.810
34.006058	-119.892398	34.004288	-119.891747	0.215
34.002937	-119.894547	34.007922	-119.895848	0.621
34.051398	-119.911327	34.049848	-119.918830	0.731
34.008312	-119.892203	34.005187	-119.891032	0.387
34.004232	-119.893245	34.009350	-119.895133	0.649
34.008577	-119.891650	34.006460	-119.890950	0.254
34.004975	-119.894205	34.024767	-119.911230	2.827

34.018745	-119.517822	34.004353	-119.528368	1.950
34.004012	-119.525585	34.045120	-119.486930	5.936
34.041600	-119.481868	34.008532	-119.512972	4.777
34.009200	-119.512450	34.018530	-119.532877	2.196
34.020543	-119.530598	34.007617	-119.506493	2.719
34.007603	-119.504035	34.013285	-119.499168	0.793
34.015063	-119.499868	34.022293	-119.511832	1.395
34.022313	-119.518570	34.005725	-119.530630	2.210
34.007502	-119.533382	34.022172	-119.523208	1.896
34.022632	-119.526350	34.007665	-119.537222	2.011
33.993618	-119.527002	33.978072	-119.527473	1.791
33.982035	-119.516667	34.012072	-119.517985	3.399
34.007117	-119.514680	34.016193	-119.535138	2.173
34.013715	-119.536653	34.007767	-119.523388	1.423
34.007738	-119.517675	34.047338	-119.485400	5.732
34.045287	-119.489175	34.039547	-119.480615	1.099
34.036580	-119.482323	34.006135	-119.510432	4.422
34.086392	-120.192252	34.081070	-120.220848	2.778
34.083410	-120.218472	34.042887	-120.204898	4.824
34.044877	-120.207030	34.050862	-120.160237	4.517
34.050472	-120.165202	34.083153	-120.176740	4.031
34.084353	-120.171582	34.048448	-120.157193	4.323
34.053445	-120.157405	34.051915	-120.169448	1.300
34.054390	-120.171988	34.063435	-120.175195	1.091
34.061413	-120.175032	34.065823	-120.155762	1.859
34.062283	-120.153417	34.056538	-120.178010	2.392

Table 2: The table below shows coordinates for the vertices in each polygon shown in Map 1. Units are in geographic decimal degrees.

Survey Area 1	
Latitude	Longitude
34.031719	-120.211540
34.087641	-120.229114
34.102482	-120.160851
34.046547	-120.143317
34.031719	-120.211540
Survey Area 2	
Latitude	Longitude
33.976545	-119.922200
33.963892	-119.946456
33.977282	-119.959980
33.984595	-119.965781
33.987688	-119.979668
33.991419	-120.022211
33.999272	-120.030185
34.030361	-119.971850
34.055257	-119.915767
34.054925	-119.910920
34.046850	-119.899362
34.037264	-119.888650
34.030858	-119.882166
34.027920	-119.880276
34.016334	-119.884897
34.009505	-119.890036
34.003729	-119.888408
33.994670	-119.893291
33.976545	-119.922200
Survey Area 3	
Latitude	Longitude
34.043878	-119.469097
34.012507	-119.494326
33.998794	-119.516121
33.981943	-119.516340
33.975864	-119.529224
33.998620	-119.531868
34.005937	-119.538530
34.011119	-119.540295
34.017756	-119.536554
34.023911	-119.527248
34.023288	-119.513979

34.051846	-119.487956
34.043878	-119.469097

SAN DIEGO STATE UNIVERSITY

Jillian Maloney <jmaloney@mail.sdsu.edu>

Local Notice to Mariners - northern Channel Islands, June 18-27, 2017

1 message

Jillian Maloney <jmaloney@mail.sdsu.edu> Mon, May 22, 2017 at 8:59 AM
To: D11LNM@uscg.mil

I'm writing to notify you of an upcoming research cruise in the vicinity of the northern Channel Islands.

SOUTHERN CALIFORNIA - NORTHERN CHANNEL ISLANDS - SONAR & CORING OPERATIONS

Scripps Institution of Oceanography will be conducting sub-bottom sonar and sediment coring operations aboard the *R/V SPROUL* from 18 June through 27 June 2017 in the vicinity of the Northern Channel Islands, CA. The R*/V SPROUL* will be monitoring VHF-FM CH.-16 and 13. Mariners are advised to use caution when transiting the area. For further comments or details contact Jillian Maloney at (619) 228-6075.
CHART 18720

Sincerely,

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website

SAN DIEGO STATE UNIVERSITY

Jillian Maloney <jmaloney@mail.sdsu.edu>

Notification of sonar survey, northern Channel Islands, June 18-27, 2017

Jillian Maloney <jmaloney@mail.sdsu.edu> Mon, May 22, 2017 at 9:43 AM
To: "McCullough, Stephen" <smccullough@santabarbaraca.gov>, jhiggins@venturaharbor.com

Dear Mr. McCullough and Mr. Higgins

I'm writing to notify you of upcoming sonar surveys and geological sampling in the vicinity of the northern Channel Islands. This work will be conducted under a California State Lands Commission Geophysical Survey Permit.

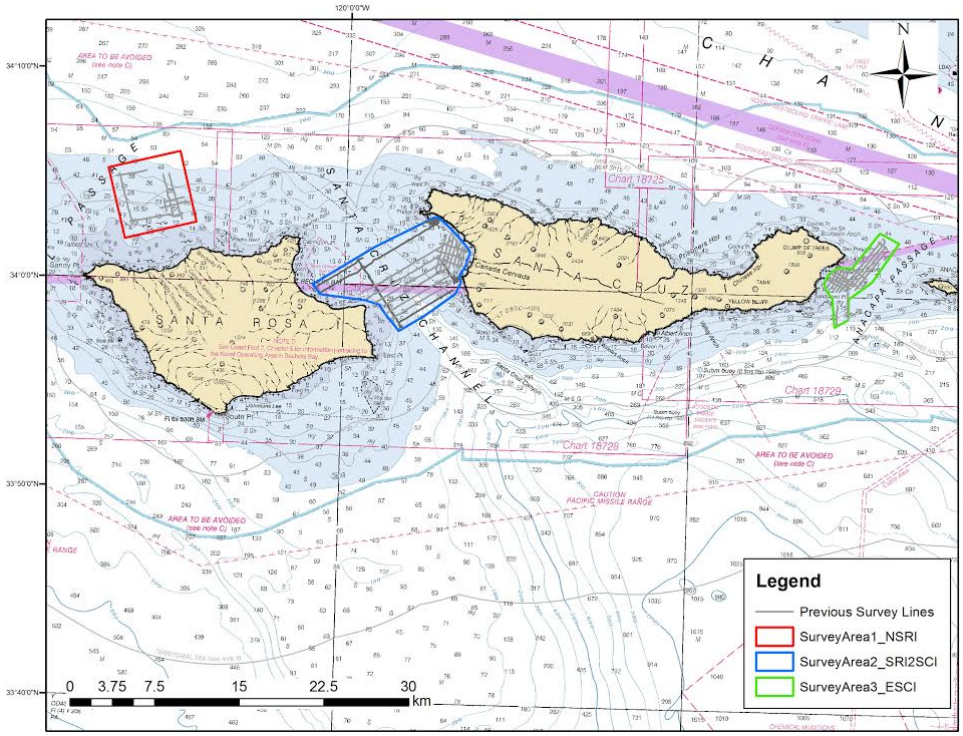
We will be operating surveys from Scripps Institution of Oceanography's R/V *Sproul.* The geophysical survey will include a hull-mounted sub-bottom sonar and sampling will use vibracore and box-core methods. The work will take place from June 18-27, 2017.

The survey areas are shown on the attached map and a list of bounding coordinates for each of three survey areas is also attached.

Please let me know if you have any questions. You can reach me through email (jmaloney@mail.sdsu.edu) or by phone (619-228-6075).

Sincerely,

Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website



SAN DIEGO STATE UNIVERSITY

Jillian Maloney <jmaloney@mail.sdsu.edu>

Notification of sonar survey, northern Channel Islands, June 18-27, 2017

Jillian Maloney <jmaloney@mail.sdsu.edu> Mon, May 22, 2017 at 9:04 AM
To: shop@blueh20.com, Mike Schechter <info@cisdivers.com>, info@dive-sar.com, info@sealanding.net, info@spectrediveboat.com, staff@raptordive.com, staff@venturadive.com

Dear Sir/Madam,

I'm writing to notify you of upcoming sonar surveys and geological sampling in the vicinity of the northern Channel Islands. This work will be conducted under a California State Lands Commission Geophysical Survey Permit.

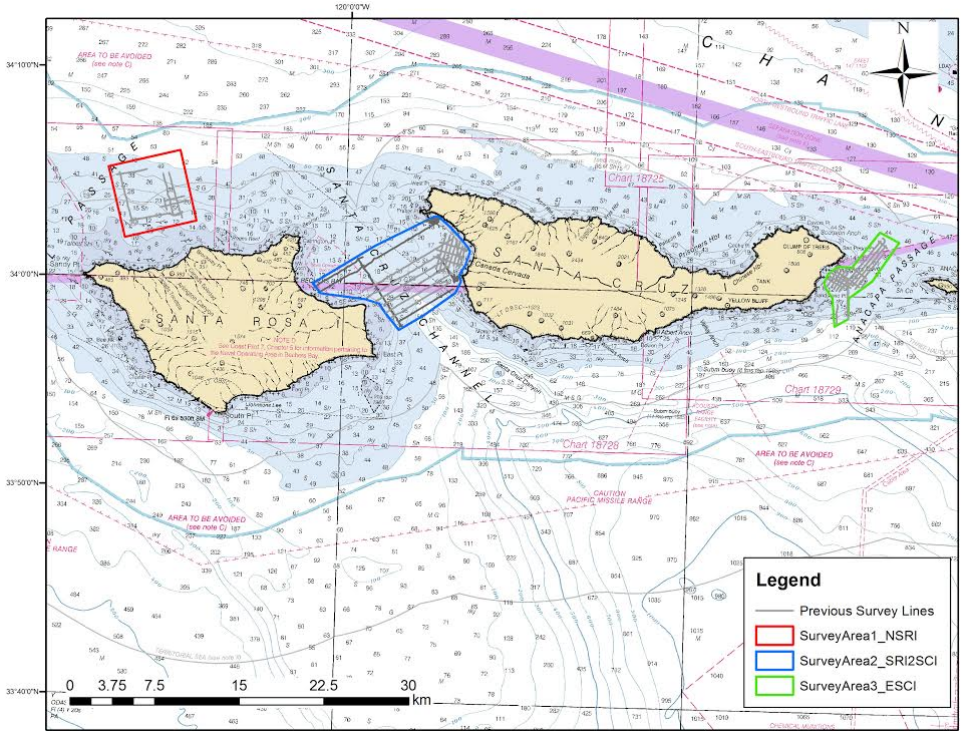
We will be operating surveys from Scripps Institution of Oceanography's R/V *Sproul.* The geophysical survey will include a hull-mounted sub-bottom sonar and sampling will use vibracore and box-core methods. The work will take place from June 18-27, 2017.

The survey areas are shown on the attached map and a list of bounding coordinates for each of three survey areas is also attached.

Please let me know if you have any questions. You can reach me through email (jmaloney@mail.sdsu.edu) or by phone (619-228-6075).

Sincerely,

--
Jillian M. Maloney
Department of Geological Sciences
San Diego State University
5500 Campanile Dr.
San Diego, CA 92182-1020
lab: 619-594-6394
cell: 619-228-6075
website



MARINE WILDLIFE CONTINGENCY PLAN
Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast
Northern Channel Islands, CA
June 18-27, 2017

1.0 INTRODUCTION

This Marine Wildlife Contingency Plan (MWCP) is prepared in compliance with the Bureau of Ocean Energy Management's (BOEM) existing State Geophysical Permit PRC 9307. This plan is intended to provide guidance to vessel operators and scientific field personnel collecting geophysical data for a cooperative agreement between the Bureau of Ocean Energy Management (BOEM) and San Diego State University (SDSU) in the northern Channel Islands, CA.

This MWCP discusses mitigation efforts that are designed to reduce the impact of survey activities on marine wildlife, and is specific to the equipment, activities, and area proposed for this survey. The proposed monitoring and mitigation actions have been shown to be effective in reducing or eliminating potential impacts to marine mammals and reptiles, and follow the CSLC's guidelines set forth in its Mitigation Monitoring Program Exhibit B.

This MWCP includes measures that specify 1) the distance, speed, and direction transiting vessels will maintain when in proximity to marine wildlife; 2) qualifications, number, location and authority of onboard marine wildlife monitors; and 3) reporting requirements in the event of an incident, and following the completion of the survey.

1.1 Regulatory Basis

Species that are either currently in danger or soon likely to be in danger of extinction throughout all or a portion of its range are protected by the Endangered Species Act of 1973. The United States Fish and Wildlife Service (USFWS), and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) implement the Endangered Species Act. A National Marine Sanctuaries Permit has been acquired from NOAA to use the equipment identified in this document to conduct scientific data acquisition in the Channel Islands National Marine Sanctuary.

1.2 Geophysical Survey Purpose and Objectives

The goal of this project is to improve models of submerged archaeological resources by incorporating geophysical mapping and geological sampling in order to aid in identification of cultural landforms from remote sensing data. We are also studying seep ecosystems in order to quantify the trophic subsidy provided by relict hydrocarbon features to the benthic community. The following are a list of objectives for this project:

1. Synthesize existing geological and geophysical data sets from offshore southern California;
2. Develop and field test a new geospatial model that will aid in identification and classification of potential cultural landforms from existing remote sensing data, seafloor maps, and the distribution of known and newly discovered Paleocoastal sites above current sea level;
3. Conduct field investigations of areas identified as having high potential to

be associated with submerged cultural landforms;
4. Refine local sea-level curve models in investigation areas;
5. Improve models of submerged archeological resources by incorporating archaeological and biological sampling data, and where possible, mapping submerged terraces and shoreline angles representing sea-level stillstands, and mapping paleochannels and possible submerged springs, toolstone outcrops, and caves and rockshelters;
6. Quantify the trophic subsidy provided by relict hydrocarbon features to the benthic community, and explore the spatial extent of this subsidy and its effects on composition, abundance, and food web structure.

This survey falls under objective number three above. The data from these geophysical surveys will help us to reconstruct the paleolandscapes that are now submerged around the northern Channel Islands. These data will then be used to identify landforms that might be sensitive sites for archaeological resources and to refine models for locating these sites in the future.

SDSU contacted the NOAA Long Beach Office staff on May 3, 2017 to acquire information on the current composition and relative abundance of marine wildlife offshore as well as any pinniped haul out sites. Additionally, one day prior to survey activities, the NOAA Long Beach office and local whale watching operations will be contacted to get an update on marine wildlife sightings in the area. This information will be conveyed to the captain and crew prior to the survey.

A review of environmental responsibility of project operations will be conducted by the chief scientist in charge of the survey operations prior to commencing the first day of operations. When new personnel are added to the crew, this training will be repeated at least for those new to the crew. They will be made aware of their individual responsibility and will be shown how to be aware of possible environmental impacts and how to mitigate them during the geophysical survey operations. Information relating to seasonality, as an indication of the types of animals that might be in our survey area, at the time of survey work will also be presented to the crew. A copy of the Marine Wildlife Contingency Plan will be provided to the crew of our survey vessels.

All personnel will be expected to be consistently aware that they are to be alert to any presence of marine wildlife while they are performing their duties. There are a number of signs/indications of marine wildlife presence and each crew member will be responsible to maintain vigilance for those signs within the constraints of their project duties. Some of those indications are:

a. Sounds - such as splashing, vocalizations (by animals and birds), and blowing (breathing).
b. Visual indications - birds aggregating, changes in water character such as areas of rippled water, white water caused by splashing, changes in color or shape of the ocean surface

1.3 Survey Schedule and Layout

The Project schedule will be from June 18-27, 2017. The proposed mapping areas are along the continental shelf adjacent to the northern Channel Islands, between Santa

Rosa Island and Santa Cruz Island, north of Santa Rosa Island, and east of Santa Cruz Island. Daily activities will include a transit to the survey location near the northern Channel Islands, geophysical survey, and transit to other locations. The ship will be operating 24 hrs/day with geological sampling as the primary focus. Geophysical survey will only be conducted as needed to identify coring locations and will only be conducted during daylight hours. The Knudsen sub-bottom profiler is mounted to the hull of the ship. Survey will only be collected when conditions are safe and swimmers, divers and paddlers are not present. The shallowest depth of survey will be ~10 m. Survey data will be monitored in real-time aboard the vessel for any potential submerged landforms or archaeological sites.

Our survey locations are illustrated in Map 1 of this notification package. Coordinates for polygons outlining our anticipated survey areas are listed in Table 2 of this notification package. Survey will only be conducted in the area as needed to identify coring locations. All surveys will be designed to fit our scientific goals, the safety of the crew and vessel, and our environmental mitigation plans.

2.0 SURVEY EQUIPMENT

We propose to use the following equipment to collect the required data:

1. Knudsen 3260, 3.5 kHz sub-bottom profiler, provided by Scripps Institution of Oceanography

The Knudsen Chirp profiler is a sub-bottom profiler with a safety zone radius of 220 meters. Equipment maintenance documentation is included in this notification.

3.0 MARINE WILDLIFE

The following discusses the marine wildlife that are most likely to be within the project region during survey operations, and the subsequent section (4.0) outlines the methods that will be instituted by the vessel operator and crew to reduce or eliminate potential impacts to marine wildlife during transit and survey operations.

Table 3-1 details the marine mammal species possibly occurring in the survey area, along with their status and population estimates and trends by stock. Table 3-2 describes the likelihood of occurrence within the project area according to the species' seasonality.

Table 3-1: Marine Mammal and Reptile Protection Status and Population Estimates and Trends by Stock

Common Name ***Scientific Name***	**Protected Status**	**Minimum Population Estimate**	**Current Population Trend**
Mysticeti			
North Pacific right whale *Eubalaena japonica*	FE, M	17 (based on-photo identification) (Eastern North Pacific Stock)	No long-term trends suggested
California grey	M	18,017	Fluctuating annually

whale *Eschrichtius robustus*		(Eastern North Pacific Stock)	
Humpback whale *Megaptera novaeangliae*	FE, M	1,878 (California/Oregon/Washington Stock)	Increasing
Minke whale *Balaenoptera acutorostrata*	M	202 (California/Oregon/Washington Stock)	No long-term trends suggested
Sei whale *Balaenoptera borealis*	FE, M	83 (Eastern North Pacific Stock)	No long-term trends suggested
Fin whale *Balaenoptera physalus*	FE, M	2,624 (California/Oregon/Washington Stock)	Increasing off California
Blue whale *Balaenoptera musculus*	FE, M	2,046 (Eastern North Pacific Stock)	Unable to determine
Odonteceti			
Sperm whale *Physeter macrocephalus*	FP, FE	751 (California/Oregon/Washington Stock)	No long-term trends suggested
Dwarf sperm whale *Kogia sima*	M	Unknown (California/Oregon/Washington Stock)	No long-term trends due to rarity
Curvier's beaked whale *Ziphius cavirostris*	M	1,298 (California/Oregon/Washington Stock)	No long-term trends due to rarity
Baird's beaked whale *Berardius bairdii*	M	615 (California/Oregon/Washington Stock)	No long-term trends due to rarity
Mesoplodont beaked whales	M	576 (California/Oregon/Washington Stock)	No long-term trends due to rarity
Bottlenose dolphin *Tursiops truncatus*	M	684 (California/Oregon/Washington Offshore Stock) 290 (California Coastal Stock)	No long-term trends suggested
Striped dolphin *Stenella coeruleoalba*	M	8,231 (California/Oregon/Washington Stock)	No long-term trends due to rarity
Short-beaked	M	343,990	Unable to determine

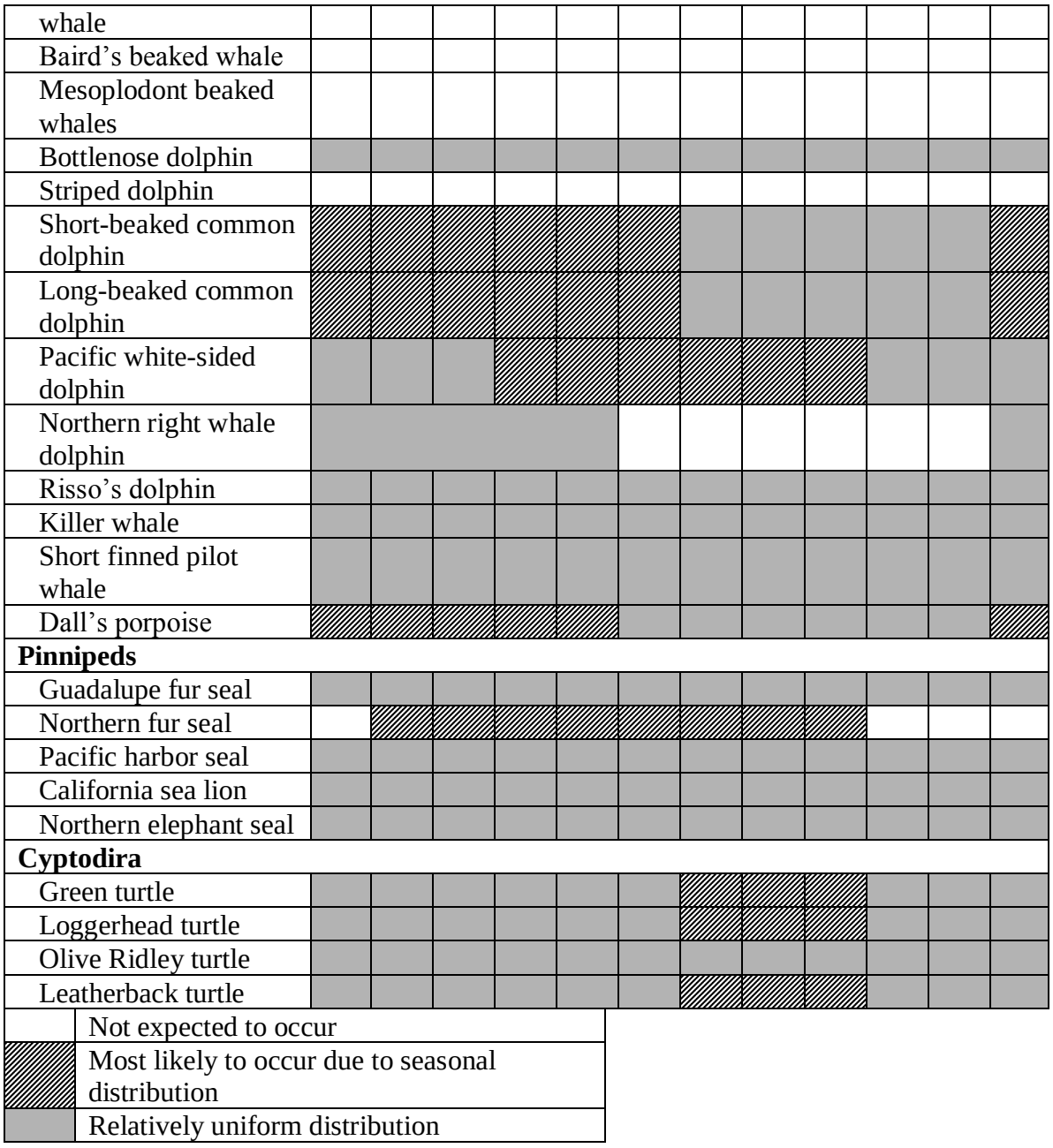
common dolphin *Delphinus delphis*		(California/Oregon/Washington Stock)	
Long-beaked common dolphin *Delphinus capensis*	M	17,127 (California Stock)	Unable to determine
Pacific white-sided dolphin *Lagenorhynchus obliquidens*	M	21,406 (California/Oregon/Washington Stock)	No long-term trends suggested
Northern right whale dolphin *Lissodelphis borealis*	M	6,019 (California/Oregon/Washington Stock)	No long-term trends suggested
Risso's dolphin *Grampus griseus*	M	4,913 (California/Oregon/Washington Stock)	No long-term trends suggested
Killer whale *Orcinus orca*	M	162 (Eastern North Pacific Offshore Stock) 354 (West Coast Transient Stock)	No long-term trends suggested Slight decrease sing mid-1990's
Short finned pilot whale *Globicephala macrorhynchus*	M	465 (California/Oregon/Washington Stock)	No long-term trends suggested
Dall's porpoise *Phcoenoides dalli*	M	32,106 (California/Oregon/Washington Stock)	Unable to determine
Pinnipeds			
Guadalupe fur seal *Arctocephalus townsendi*	FT, M	3,028 (Mexico Stock) Undetermined in California	Increasing
Northern fur seal *Callorhinus ursinus*	M	5,395 (San Miguel Island Stock)	Increasing
Pacific harbor seal *Phoca vitulina richardsi*	M	31,600 (California Stock)	Stable
California sea	M	141,842	Unable to determine;

lion *Zalophus californianus*		(California Stock)	increasing in most recent three year period
Northern elephant seal *Mirounga angustirostris*	M	74,913 (California Breeding Stock)	Increasing
Cyptodira			
Green turtle *Chelonia mydas*	FT	3,319 (Eastern Tropical Pacific)	Increasing
Loggerhead turtle *Caretta caretta*	FE	1,000 (California)	Decreasing
Olive Ridley turtle *Lepidochelys olivacea*	FT	1.39 million (Eastern Tropical Pacific)	Increasing
Leatherback turtle *Dermochelys coriacea*	FE	178 (California)	Decreasing

Marine Mammal Sources: NMFS 2008, 2011a. "stock assessment report"
Marine Turtle Sources: NMFS 2004, Marquez, et al. 2002, Eguchi et al. 2007, and Benson et al. 2007. Estimates are based on number of current numbers of nesting females.
Protected Status Codes: FE- Federally listed Endangered; FT- Federally listed Threatened; M- Protected under Marine Mammal Protection Act

Table 3-2. Marine Wildlife Species and Most Likely Periods of Occurrence within the Project Area

Species	Month of Occurrence											
	J	F	M	A	M	J	J	A	S	O	N	D
Mysticeti												
North Pacific right whale												
California grey whale												
Humpback whale												
Minke whale												
Sei whale												
Fin whale												
Blue whale												
Odonteceti												
Sperm whale												
Dwarf sperm whale												
Curvier's beaked												



Sources: Bonnell and Dailey 1993, NMFS 2011, NCCOS 2007

4.0 ONBOARD MITIGATIONS

4.1 Fishing Gear Clearance

In addition to submitting the required Notice to Mariners that will advise commercial fishers of pending on-water activities, prior to the start of each survey the vessel will note and record the presence of deployed fishing gear within the survey area. No survey lines within 30 m (100 ft) of the observed fishing gear will be completed. The survey crew will not remove or relocate any fishing gear; removal or relocation will only be accomplished by the owner or by an authorized CDFG agent.

4.2 Marine Wildlife Monitoring

MWMs have been trained by a certified and registered MWM at Scripps Institution of Oceanography. Training included images of wildlife we expect to encounter, examples of data collection, review of CSLCs requirements for MWMs, and review of the authority of each MWM while aboard the vessel. For additional information on MWM qualifications, see Appendices A and B. Two MWMs will be on board the vessel for wildlife monitoring. The MWMs will be provided with standard data collection sheets (Appendix C), binoculars, and reference documentation for marine mammal species. All monitoring activities will be documented and copies of datasheets will be provided to CSLC upon completion of the survey.

The MWMs is responsible for monitoring during the survey equipment operations. The MWMs will monitor within the safety zone of 220 m radius for sub-bottom profiler geophysical equipment as identified in Section 2.0 of this mitigation plan. Sightings of marine mammals within the safety zone will be recorded with location, date & time, and species where identification is possible. The MWMs will record daily weather conditions and any occasions where geophysical equipment was shut-down due to the presence of marine mammals.

The MWMs shall have the authority to stop (i.e., shut down) survey operations if a marine mammal or reptile is observed within the specified safety zone. If an animal is sighted within the safety zone, the equipment must be shut down and not ramped-up to full power until the animal is sighted outside of the safety zone or has not been observed for 15 minutes.

The MWMs shall also have authority to recommend continuation (or cessation) of operations during periods of limited visibility (i.e., fog, rain) based on the observed abundance of marine wildlife. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the onboard MWMs. During operations, if an animal's actions are observed to be irregular, the monitor shall have authority to recommend that equipment be shut down until the animal moves further away from the sound source. If irregular behavior is observed, the equipment shall be shut-off and will be restarted and ramped-up to full power, as applicable, or will not be started until the animal(s) is/are outside of the safety zone or have not been observed for 15 minutes.

The survey operator shall use a "soft start" technique at the beginning of survey activities each day (or following a shut down) to allow any marine mammal that may be in the immediate area to leave before the sound sources reach full energy. Surveys shall not be conducted at nighttime or when the safety zone cannot be effectively monitored. Operators shall initiate each piece of equipment at the lowest practical sound level, increasing output in such a manner as to increase in steps up to full power output. During ramp-up, the MWMs shall monitor the safety zone. If marine mammals are sighted within or about to enter the safety zone, a power-down or shut down shall be implemented as though the equipment was operating at full power. Initiation of ramp-up procedures from shut down requires that the MWMs be able to visually observe the full safety zone.

4.3 Mitigations During Transit and Survey

During transits, there is a potential for encountering marine wildlife and the vessel operators will take every precaution to avoid close proximity to wildlife. If the vessel operator observes a large cetacean within the path of the transiting vessel, they will immediately slow the vessel and/or change course in order to avoid contact. Cetaceans (whales) vary in their swimming patterns and duration of dives and therefore all shipboard personnel will be watchful as the vessel crosses the path of a whale or anytime whales are observed in the area.

If whales are observed during transits, the vessel operator will institute the following measures:

- Maintain a minimum distance of 100 m from large sighted whales;
- Do not cross directly in front of or across the path of sighted whales;
- When transit directions is parallel to whale path, maintain constant speed that is not greater than the whales speed, or alter transit direction away from whale path;
- Do not position the vessel in such a manner to separate female whales from their calves
- If a whale engages in evasive or defensive action, slow the vessel and move away from the animal or stop the vessel until the animal calms or moves out of the area.

During survey operations, the vessel will maintain survey a speed of approximately 4-6 knots and will maintain a heading that coincides with survey track lines. If marine wildlife is observed within the vicinity of the vessel, the vessel operator will take precautions to avoid collision, ending and restarting the track line survey if necessary.

If a collision with marine wildlife occurs, the vessel operator will document the conditions under which the accident occurred, including the following:

- Location of the vessel when the collision occurred (latitude and longitude);
- Date and time;
- Speed and heading of the vessel;
- Observed conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog);
- Species of marine wildlife contacted; and
- Organization, vessel ID and name of master in charge of the vessel at time of accident.

In accordance with NOAA requirements, after a collision, the vessel should stop, if safe to do so. The vessel may proceed after confirming that it will not further damage the animal by doing so. The vessel will then communicate by radio or telephone all details to the vessel's base of operations. The BOEM or SDSU chief scientist will contact the Stranding Coordinator, NMFS, Southwest Region, Long Beach, to obtain instructions. Alternatively, the vessel captain may contact the NMFS Stranding Coordinator directly using the marine operator to place the call or directly from an onboard telephone, if available to:

NOAA Southwest Regional Stranding Coordinator
National Marine Fisheries Service
501 West Ocean Blvd, Suite 4200
Long Beach, CA 90802-4213
562-980-4017
Contact: Sarah Wilkin
Email: sarah.wilkin@noaa.gov

It is unlikely that the vessel will be asked to stand by until NOAA or CDFG personnel arrive, however this will be determined by the Stranding Coordinator. The vessel operator is not allowed to aid injured marine wildlife or recover the carcass unless requested to do so by the NOAA Stranding Coordinator.

Reports will be communicated to the federal and state agencies listed below:

Federal	**State**	**State**
Sarah Wilkin, Stranding Coordinator Southwest Region National Marine Fisheries Service Long Beach, California (562)980-4017	Enforcement Dispatch Desk California Department of Fish and Game Long Beach, California (562) 590-5132	California State Lands Commission Division of Environmental Planning and Management Sacramento, California (916) 574-1938

4.4 Operational Measures

In addition to the procedures outlined above for MWMs (Section 4.2), the ship's crew will take the following precautionary measures to minimize impact to marine wildlife:

- Use a "soft start" technique at the beginning of survey activities each day (or following a shutdown) to allow any marine mammal that may be in the immediate area to leave before the sound sources reach full energy
- Not approach within 300 m of haul-out sites (consistent with NMFS guidelines) (Fig. 2-1);

Fig. 4-1: Pinniped haul out sites in Southern California identified by colored points. The proposed survey area does not approach any identified haul out sites within 300 m .
Source: NOAA NMFS, http://www.arcgis.com/home/webmap/viewer.html?webmap=2ff3fabe20cf4c83959cae1597500b09

- Expedite survey activity in this area in order to minimize the potential for disturbance of pinnipeds on land;
- Continuously monitor the survey area to ascertain the presence, species and location of any marine wildlife apparent in the intended survey area.
- Make every effort to maintain distance from sighted marine mammals and other marine wildlife;
- Do not cross directly in front of (perpendicular to) whales
- When paralleling large cetaceans, the vessel will operate at a constant speed that is not faster than that of the animals;
- Care will be taken to ensure female whales are not separated from their calves; and, if a whale engages in evasive or defensive action, the vessel will reduce speed or stop until the animal calms or moves out of the area.
- The vessel operator will refrain from erratic operating behavior when transiting and will operate at 4 kts during surveys
- Limit the frequency, pulse length, and pulse rate whenever possible to reduce potentially harmful noises.

4.5 Monitoring Reporting

A post-survey field report will be submitted to CSLC staff as soon as possible but no more than 30 days after the completion of survey activities.

APPENDIX A:
MARINE WILDLIFE OBSERVER CERTIFICATIONS

Scripps Institution of Oceanography (SIO) at the University of San Diego, California has provided training for Marine Wildlife Monitors (MWMs) in support of low power geophysical surveys in California State Waters and Federal Waters under NOAA National Marine Fisheries (NMFS) jurisdictions. This training was provided for sea-going personnel, including research assistants and technical support staff, to support scientific geophysical surveys and to meet marine mammal mitigation obligations pursuant to California State Lands Commission (CSLC) and NMFS requirements.

The MWM training was conducted by certified MWM Michelle Lande, a marine biologist and staff scientist at SIO at the time of the training (resume and certification included). Ms. Lande holds a B.A. in biology (Wellesley College) and an M.A.S. in Marine Biodiversity and Conservation (SIO). She was trained and certified as an MWM during a 3-day workshop at RPS Group in Houston, Texas, and has all of the instructional material (handouts, identification manuals, slides, video, etc.) for teaching the workshop at SIO. Ms. Lande also has extensive experience working at sea, identifying marine wildlife, and working in environmental regulation.

The training was conducted during a one day workshop at SIO that covered multiple topics important for marine wildlife observation. These included identification of marine mammal species, normal and abnormal behaviors, status and trends of marine wildlife species, determination of safety zones for geophysical equipment, and the authority of the MWM to recommend equipment shutdown. The training included visual images, documentation of rules and regulations, and example datasheets. As part of the training, personnel performed typical MWM duties aboard an SIO vessel including continuous observation, wildlife identification, and data recording. Datasheets used for recording MWM activities and marine wildlife detections are included as Appendix C.

<u>Certified Marine Wildlife Monitors</u>
Boe Derosier
Lana Graves
Amy Gusick
James Holmes
Shannon Klotsko
Jillian Maloney
Brendon Mendenhall
Colby Nicholson
Valarie Sahakian
Emily Wei

Michelle Lande

6120 Tarragona Dr. San Diego, CA 92115
619.246.4453
michelle.lande@gmail.com

Education

Scripps Institution of Oceanography, UCSD: *M.A.S., Marine Biodiversity and Conservation*, 2009
Wellesley College: *B.A., Biological Sciences*, 2006

Professional Experience

Biologist/Regulatory Specialist
AECOM, Inc.
San Diego, CA
2015- Present

Conduct biological assessments, author biological technical reports and impact reports
Complete regulatory permit applications
Support CEQA and NEPA compliance
Ensure MMPA, ESA, CESA compliance

Coastal Outreach Coordinator
Louisiana Wildlife Federation
Baton Rouge, LA
2014-2015

Analyzed coastal restoration project proposals in the Louisiana Coastal Master Plan
Provided comments on RESTORE Act rules, regulations and project proposals
Provided recommendations in response to natural resource use permit applications
Analyzed state natural resource legislation and represented LWF in the legislature
Represented LWF at conferences, hearings, and public meetings

Protected Species Observer
Scripps Inst. of Oceanography
UC San Diego
San Diego, CA
2013

Worked with CA State agencies on permit application
Ensured research activities complied with protected species laws
Prepared Marine Wildlife Contingency plan describing protected species mitigation
Trained, scheduled, and supervised Protected Species Observers
Collected, analyzed, and reported wildlife data from research cruises

Program Representative II
UC, Cooperative Extension
San Diego, CA
2011-2013

Co-authored reports about water quality research conducted in San Diego Bay
Distilled technical reports into 5 fact sheets for the general public
Developed and executed an educational workshop series
Represented the University at stakeholder meetings and public hearings
Built and maintained databases of clientele and stakeholders
Evaluated program effectiveness, reported to the University and funders
Oversaw administrative tasks including budgets, purchasing, and contracts

CA Fisheries Technician
CA Dept. of Fish and Wildlife
San Diego, CA
2010-2011

Collected coastal fisheries field data in San Diego County
Compiled and edited data for entry
Acted as liaison between the CA Dept. of Fish and Wildlife and the public

Naturalist
Safari Boat Excursions
Maui, HI
2006-2008

Educated recreational anglers on the Marine Life Protection Act
Detected wildlife during tours and narrated whale watches
Designed and executed environmental education talks Communicated
marine science and conservation on eco-tours
Acted as boat crew and ensured safety of guests at sea

Outreach and Scientific Publications

Michelle Lande, Leigh Johnson, Sabrina Drill and Darren Haver. *2013*. Identification and Detection Best Management Practices for Aquatic Invasive Species for Southern California. *UCCE-SD* Field Guide 2013-1.

Carolynn Culver, Leigh Johnson and **Michelle Lande**. *2012*. The Influence of Boat Hull Coatings on Fouling Growth. *UCCE-SD/UC-SGEP* Fact Sheet 2012-2.

Carolynn Culver, Leigh Johnson and **Michelle Lande**. *2012*. Hull Fouling Species of Concern in Southern California Coastal Marinas. *UCCE-SD/UC-SGEP* Fact Sheet 2012-1.

Carolynn Culver, Leigh Johnson and **Michelle Lande**. *2012*. IPM for Boats: Integrated Pest Management for Hull Fouling in Southern California Marinas. *UCCE-SD/UC-SGEP* Technical Report # T-074.

Leigh Johnson, Linda Fernandez and **Michelle Lande**. *2012*. Crossing Boundaries: Managing Invasive Species and Water Quality Risks for Coastal Boat Hulls in California and Baja California. *UCCE-SD/UC-SGEP* Technical Report # T-073.

Gregory B. Bissonette, **Michelle D. Lande**, Gabriela J. Martins, and Elizabeth Powell. *2012*. Versatility of the mouse reversal/set-shifting test: effects of topiramate and gender. *Physiology and Behavior*.

Michelle Lande, Leigh Johnson and Carolynn Culver. *2011.* Hull Fouling and Copper Tolerance- 2011 Scientific Review. *UCCE-SD/UC-SGEP* Fact Sheet 2011-5.

Margot L. Stiles, Julie Stockbridge, **Michelle Lande**, Michael F. Hirshfield. *2010.* Impacts of Bottom Trawling on Fisheries, Tourism and the Marine Environment. *Oceana*.

Skills and Certifications

Computer Skills: Microsoft Office (Word, Excel, Access, Outlook, PowerPoint), Adobe Media Suite (Photoshop, Illustrator, Premier, Audition), website content management (Wordpress, WesiteBuilder, SiteBuilder 3, Droople), ArcGIS, database management (Constant Contact, SPSS, VisualFoxPro, FileMakerPro), image processing (Analyze).

Research Skills: Marine science data collection, wildlife species identification, basic microbiology and behavior laboratory techniques

Certifications & Training: Protected Species Observer Training (June 23, 2013 at RPS Group, 411 N. Sam Houston Parkway, STE 400, Houston TX, 281-448-6188), Conflict Management & Mediation Training (UC), Essential Facilitation Training (UC), Supervisor 101 Training (UC), Grant Proposal Development Training (SDSU), SCUBA to Advanced Open Water Certification (SSI, PADI), CPR Certification (Red Cross).

RPS Offshore Protected Species Observer Training

This is to verify that

Michelle Lande

Has successfully completed a course of instruction in
Training for Seismic Mitigation
Under BOEM NTL 2012-G02

This certificate of Completion awarded
This 23rd day of May 2013

RPS

411 N Sam Houston Pkwy, Suite 400
Houston, Texas 77060
Telephone (281) 448-6188 Fax (281) 448-6189
www.rpsgroup.com

BOEM Approved Instructor

APPENDIX C

Effort Form to Record MWM activities, general conditions, and general survey information

Date	
Observer Location	
Observer Initials	
Start Time	
Start Lat	
Start Long	
Water Depth	
End Time	
End Lat	
End Long	
Compass Heading	
Vessel Speed	
Line Number	
Vessel Activity	
Array Volume	
Array Depth	
Precipitation	
Light/Dark	
Visibility	
Glare Severity	
Glare Direction	
Sea State	
Swell	
Wind Speed	
Wind Direction	
Comments/Notes	

Form Number:
Corresponding Forms:

Detection Form to Record Marine Wildlife Sightings and Vessel Response

Date	
Visual Detection Number	
Detection Method	
Detection Cue	
Common Name	
Scientific Name	
Family	
Certainty of Identification	
Number of Adults	
Number of Juveniles	
Total Number	
Bearing to Animals	
Number of Reticles or Eyeball	
Initial Behavior	
Behavior 2	
Animal Pace	
Direction of Travel	
Initial Heading of animal	
Final Heading of Animal	
Description	
Source Activity at Final Detection	
Time Animals Entered EZ	
Time Animals Left EZ	
Closest Distance of Animals to Source	
Closest Distance of Animals to Vessel	
Time at Closest Approach to Source	

Form Number:

Corresponding Effort Form:

OIL SPILL CONTINGENCY PLAN
Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast Northern Channel Islands, CA
June 18-27, 2017

1.0 INTRODUCTION
The survey operations will be conducted on Scripps Institution of Oceanography's R/V *Sproul* and it is anticipated that response to any operational spills will be quickly identified and response will be initiated quickly and efficiently by the vessel operator. Oil spills in United States (U.S.) marine waters shall be reported immediately.

2.0 OPERATIONAL SPILLS
Operational spills might involve one or more of the following substances carried on board the vehicles: (i) fuel and (ii) lube oil. The vessel is equipped with woven polypropylene sheets for rapid absorption of surface oil and protective gloves, and a disposal bag. All of the liquids (listed below) that could cause a hazardous spill are either in the fuel tank or in the vehicle engine. Spill occurrence will likely be during fueling, in the event of grounding or if any instance occurred that punctured the gas tank. In the event a spill occurred in the engine compartment, the absorbent sheets would be used to contain the hazardous liquids and the bilge would not be emptied until it could be pumped out at a hazardous waste facility. We do not anticipate a spill of greater than .25 gallons.

(i) Fuel:

Absorbent sheets, protective gloves, and a disposal bag shall be available for use in the event of a spill. If the fuel is spilled on the deck, it shall be immediately removed, bagged and disposed of at an appropriate hazardous waste reception facility. In the event of spillage in the water, the vessel master shall notify the Coast Guard and port facility.

(ii) Lube oil:

Absorbent sheets, protective gloves, and a disposal bag shall be available for use in the event of a spill. If the oil is spilled in the machinery space, it shall be immediately removed, bagged and disposed of at an appropriate hazardous waste reception facility. In the event of spillage in the water, the vehicle operator shall notify the Coast Guard and port facility.

3.0 EMPLOYEE TRAINING ON OIL SPILL CONTINGENCY PLAN
Prior to the launching of the vessel for any activities, all captain and crew members on the vessel will have read the Oil Spill Contingency Plan, understand procedures to be implemented in the event of an oil spill, and know where the oil spill clean up materials are located on the vessel.

4.0 VESSEL FUELING
All vessel fueling will be conducted at an approved docking facility. No cross vessel fueling will be performed. Appropriate spill avoidance measures during filling procedures will be observed.

5.0 PRIORITY ACTIONS TO ENSURE PERSONNEL AND VESSEL SAFETY
Safety of vessel and crew are paramount. In the event that a crewman's injuries require outside emergency assistance, the SIO safety officer shall be contacted immediately and emergency personnel contacted. While awaiting emergency assistance, the on board vessel master or qualified vessel crew personnel will render first aid and/or CPR.

6.0 MITIGATING ACTIVITIES
If safety of both the vessel and the personnel has been addressed, the vessel master shall care for the following issues:

- Assessment of the situation and monitoring of all activities as documented evidence.
- Care for further protection of the personnel, use of protective gear, assessment of further risk to health and safety.
- Containment of the spilled material by absorption and safe disposal within leak proof containers of all used material onboard until proper delivery ashore, with due consideration to possible fire risk.
- Decontamination of personnel after finishing the cleanup process.

7.0 EMERGENCY CONTACTS FOR STATE AND FEDERAL AGENCIES

Emergency numbers for U.S.C.G. for the San Francisco and Central Coast Areas are:
Pacific SAR Coordinator - Alameda: 510-437-3700
Rescue Coordination Center, Alameda: 510-437-3700

Any oil spill in U.S. marine waters shall be reported immediately to the following state and agencies:
West Coast Oil Spill hot-line 800-OELS-911, *or*
Department of Fish and Game CalTIP 888-CFG-CALTip (Californians Turn In Poachers & Polluters) (888-334-2258). *and*
U.S. Coast Guard National Response Center 800-424-8802
California Office of Emergency Services (OES) 800-OILS-911 or 800-852-7550.

During the phone call, the following information will be given over the phone.
a. Name and telephone number of caller.
b. Spill location
c. What was spilled (oil, gas, diesel, etc.)
d. Estimated size of spill
e. The date & time spill was identified (same day).
f. Any oiled or threatened wildlife
g. Source of spill, if known h. Activity observed at the spill site

After taking the necessary actions, the spill will be reported in writing to the Governor's Office of Emergency Services on their forms.

Additionally, California Department of Fish and Game certified wildlife rescue/response organizations will be contacted about the spill. In the Southern California area, these include the following contacts:

Oiled Wildlife Care 1-877-UCD-OWCN	Network Animal Advocates 323-651-1336
California Wildlife Center 310-458-9453	South Bay Wildlife Rehab 310-378-9921

GEOPHYSICAL SOUND SOURCE SYSTEMS MAINTENANCE RECORDS
Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast
Northern Channel Islands, CA
June 18-27, 2017

Scripps Institution of Oceanography Marine Facility (MARFAC) operates an arsenal of remote sensing instruments ranging from swath bathymetry to multi-channel seismic systems. Data acquisition is world wide and such an operation requires extensive testing of the geophysical equipment before deployment by a talented group of marine technicians and engineers. SIO operates, maintains, and repairs all geophysical equipment employed to support their field campaigns.

Knudsen 3260 Chirp sub-bottom sonar:
The Knudsen sonar is operated and owned by Scripps Institution of Oceanography and has been thoroughly checked, tested and calibrated according to the manufacturer's recommended procedures. The Knudsen system is fully compliant with manufacturer stated capabilities and specifications.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Channel Islands National Marine Sanctuary
University of California Santa Barbara
Ocean Science Education Building 514, MC 6155
Santa Barbara, CA 93106-6155

April 6, 2017

Dr. Jillian Maloney
San Diego State University
55 Campanile Dr.
San Diego, CA 92115

Dear Dr. Maloney:

The National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries (ONMS) has approved the issuance of permit number CINMS-2017-004 to conduct activities within Channel Islands National Marine Sanctuary (sanctuary) for research purposes. Activities are to be conducted in accordance with the permit application and all supporting materials submitted to the sanctuary, and the terms and conditions of permit number CINMS-2017-004 (enclosed).

This permit is not valid until signed and returned to the ONMS. Retain one signed copy and carry it with you while conducting the permitted activities. Additional copies must be signed and returned, by either mail or email, to the following individuals within 30 days of issuance and before commencing any activity authorized by this permit:

Sean Hastings
Resource Protection Coordinator
Channel Islands National Marine Sanctuary
UC Santa Barbara, OSEB 514, MC 6155
Santa Barbara, CA 93106
Sean.Hastings@noaa.gov

National Permit Coordinator
NOAA Office of National Marine Sanctuaries
1305 East-West Highway (N/ORM6)
SSMC4, 11th Floor
Silver Spring, MD 20910
nmspermits@noaa.gov

Your permit contains specific terms, conditions and reporting requirements. Review them closely and fully comply with them while undertaking permitted activities.

If you have any questions, please contact Sean Hastings at 805-893-6424. Thank you for your continued cooperation with the ONMS.

Sincerely,

Christopher T Mobley

Christopher Mobley
Superintendent

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Channel Islands National Marine Sanctuary
University of California Santa Barbara
Ocean Science Education Building 514, MC 6155
Santa Barbara, CA 93106-6155

CHANNEL ISLANDS NATIONAL MARINE SANCTUARY
RESEARCH PERMIT

Permittee:
Dr. Jillian Maloney
San Diego State University
55 Campanile Dr.
San Diego, CA 92115

Permit Number: CINMS-2017-004
Effective Date: May 1, 2017
Expiration Date: December 31, 2018

Project Title: Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast

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This permit is issued for activities in accordance with the National Marine Sanctuaries Act (NMSA), 16 USC §1431 *et seq.*, and regulations thereunder (15 CFR Part 922). All activities must be conducted in accordance with those regulations and law. No activity prohibited in 15 CFR Part 922 is allowed except as specified in the activity description below.

Subject to the terms and conditions of this permit, the National Oceanic and Atmospheric Administration (NOAA), Office of National Marine Sanctuaries (ONMS) hereby authorizes the permittee listed above to conduct research activities within Channel Islands National Marine Sanctuary (CINMS or sanctuary). All activities are to be conducted in accordance with this permit, the permit application, and supplemental materials received March 29, 2017. The permit application is incorporated into this permit and made a part hereof; provided, however, that if there are any conflicts between the permit application and the terms and conditions of this permit, the terms and conditions of this permit shall be controlling.

Permitted Activity Description:
The following activities are authorized by this permit:

- Drilling into the submerged lands of the sanctuary
- Moving, removing, injuring, or possessing, or attempting to move, remove, injure, or possess a sanctuary historical resource except those from maritime heritage areas to be avoided
- Take and possession of sanctuary resources in federal marine reserves
- Take of marine mammals within the sanctuary

No further violation of sanctuary regulations is allowed.

Permitted Activity Location:
The permitted activity is allowed only in the following location(s):

Throughout CINMS, except in areas outlined in Appendix 1.

Special Terms and Conditions:

1. If sanctuary staff concludes that seafloor mapping activities are in danger of creating a disturbance to marine mammals in CINMS, the permit holder shall be immediately notified and the project shall be suspended, altered, or postponed to eliminate disturbance of such natural resources.

2. The permittee shall submit a final report of all activities conducted under this permit to the CINMS (see contact in general condition #1) no later than 3 months after the conclusion of the field season. The report should include a summary of activities and information regarding daily activities such as location (latitude and longitude) of cores, footprints of mapping areas, deployments, or samples, discovery or disturbance of historical artifacts, problems encountered, equipment lost, etc. The annual report shall also include a synopsis of research results to date.

3. Abandonment of equipment or any item not otherwise permitted is prohibited. In the event that any equipment is damaged or dislocated due to weather or any other cause, the permittee shall use all available means to locate and recover the affected item(s). The location and description of any equipment abandoned or lost in the sanctuary for any reason shall be noted in the summary report with an explanation why the equipment was not recovered.

4. The permittee will be required to pay any or all expenses associated with the locating of and/or removal of lost gear by NOAA or its designee of any equipment that is not recovered by the permittee.

5. When operating within CINMS, permitted activities shall be allowed throughout the sanctuary including federal marine reserves except in maritime heritage areas to be avoided and biologically sensitive habitats. See Appendix 1 for guidance.

6. Permittee will abide by all rules regarding marine mammal safety as per their California State Lands Permit (CSLC Geophysical Survey Permit PRC 9307). Any recorded Marine Mammal observer notes should be shared with CINMS in the final project report.

7. Collection or entanglement of any marine mammal or sea turtle species must be reported in writing to CINMS within 14 days of collection or entanglement. Species, location, approximate length, and disposition, must be noted.

8. If historical or marine archaeological resources are encountered at any time, the permit holders shall immediately contact the Sanctuary Superintendent or Maritime Heritage Coordinator for proper handling and conservation guidance. See General Condition #1 for contact information. The permittee will be expected to follow the guidance and procedures drafted by permittee and approved by National Park Service and included with the permit application.

9. This permit allows for the drilling into the sanctuary seafloor throughout the sanctuary except for state marine reserves. Drilling and sediment extraction in the state marine reserves is contingent on the permittee having a California Scientific Collection permit from the California Department of Fish and Game (contact Brian Owens at BOwens@dfg.ca.gov). Drilling and sediment extraction in the federal marine reserves is allowed by this permit.

10. This activity requires permission from other agencies. The enclosed permit is not valid until all other necessary permits and/or authorizations are obtained. Any direct or incidental harassment of marine mammals requires a permit from the National Marine Fisheries Service (contact Monica DeAngelis at 562-980-3232) and/or U.S. Fish and Wildlife Service (contact Douglass Cooper at 805-644-1766). Direct or incidental harassment of seabirds requires a permit from the U.S. Fish and Wildlife Service. Research conducted within California state waters or California State marine protected areas (MPA) may require permission from the California Department of Fish and Game (contact Brian Owens at BOwens@dfg.ca.gov) and the California Office of Historic Preservation (contact (916) 445-7000). Permission to drill into rock or install devices may require permission from the California State Lands Commission (contact Grace Kato 916-574-1227).

General Terms and Conditions:

1. Within 30 (thirty) days of the date of issuance, the permittee must sign and date this permit for it to be considered valid. Once signed, the permittee must send copies, via mail or email, to the following individuals:

Sean Hastings
Resource Protection Coordinator
Channel Islands National Marine Sanctuary
UC Santa Barbara Bldg 514 MC 6155
Santa Barbara, CA 93106
Sean.Hastings@noaa.gov

National Permit Coordinator
NOAA Office of National Marine Sanctuaries
1305 East-West Highway (N/ORM6)
SSMC4, 11th Floor
Silver Spring, MD 20910
nmspermits@noaa.gov

2. It is a violation of this permit to conduct any activity authorized by this permit prior to the ONMS having received a copy signed by the permittee.

3. This permit may only be amended by the ONMS. The permittee may not change or amend any part of this permit at any time. The terms of the permit must be accepted in full, without revision; otherwise, the permittee must return the permit to the sanctuary office unsigned with a written explanation for its rejection. Amendments to this permit must be requested in the same manner the original request was made.

4. All persons participating in the permitted activity must be under the supervision of the permittee, and the permittee is responsible for any violation of this permit, the NMSA, and sanctuary regulations for activities conducted under, or in junction with, this permit. The permittee must assure that all persons performing activities under this permit are fully aware of the conditions herein.

5. This permit is non-transferable and must be carried by the permittee at all times while engaging in any activity authorized by this permit.

6. This permit may be suspended, revoked, or modified for violation of the terms and conditions of this permit, the regulations at 15 CFR Part 922, the NMSA, or for other good cause. Such action will be communicated in writing to the applicant or permittee, and will set forth the reason(s) for the action taken.

7. This permit may be suspended, revoked or modified if requirements from previous ONMS permits or authorizations issued to the permittee are not fulfilled by their due date.

8. Permit applications for any future activities in the sanctuary or any other sanctuary in the system by the permittee might not be considered until all requirements from this permit are fulfilled.

9. This permit does not authorize the conduct of any activity prohibited by 15 CFR § 922, other than those specifically described in the "Permitted Activity Description" section of this permit. If the permittee or any person acting under the permittee's supervision conducts, or causes to be conducted, any activity in the sanctuary not in accordance with the terms and conditions set forth in this permit, or who otherwise violates such terms and conditions, the permittee may be subject to civil penalties, forfeiture, costs, and all other remedies under the NMSA and its implementing regulations at 15 CFR Part 922.

10. Any publications and/or reports resulting from activities conducted under the authority of this permit must include the notation that the activity was conducted under National Marine Sanctuary Permit CINMS-2017-004 and be sent to the ONMS officials listed in general condition number 1.

11. This permit does not relieve the permittee of responsibility to comply with all other federal, state and local laws and regulations, and this permit is not valid until all other necessary permits, authorizations, and approvals are obtained. Particularly, this permit does not allow disturbance of marine mammals or seabirds protected under provisions of the Endangered Species Act, Marine Mammal Protection Act, or Migratory Bird Treaty Act. Authorization for incidental or direct harassment of species protected by these acts must be secured from the U.S. Fish and Wildlife Service and/or NOAA Fisheries, depending upon the species affected.

12. The permittee shall indemnify and hold harmless the Office of National Marine Sanctuaries, NOAA, the Department of Commerce and the United States for and against any claims arising from the conduct of any permitted activities.

13. Any question of interpretation of any term or condition of this permit will be resolved by NOAA.

Your signature below, as permittee, indicates that you accept and agree to comply with all terms and conditions of this permit. This permit becomes valid when you, the permittee, countersign and date below. Please note that the expiration date on this permit is already set and will not be extended by a delay in your signing.

4/10/2017

Dr. Jillian Maloney
San Diego State University

Date

07 APR 2017

Christopher Mobley
Superintendent
Channel Islands National Marine Sanctuary

Date

0 document(s) attached.

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
Air Quality and Greenhouse Gas (GHG) Emissions (MND Section 3.3.3)						
MM AIR-1: Engine Tuning, Engine Certification, and Fuels. The following measures will be required to be implemented by all Permittees under the Offshore Geophysical Permit Program (OGPP), as applicable depending on the county offshore which a survey is being conducted. Pursuant to section 93118.5 of CARB's Airborne Toxic Control Measures, the Tier 2 engine requirement applies only to diesel-fueled vessels.	All Counties: Maintain all construction equipment in proper tune according to manufacturers' specifications; fuel all off-road and portable diesel-powered equipment with California Air Resources Board (CARB)-certified motor vehicle diesel fuel limiting sulfur content to 15 parts per million or less (CARB Diesel).	Daily emissions of criteria pollutants during survey activities are minimized.	Determine engine certification of vessel engines. Review engine emissions data to assess compliance, determine if changes in tuning or fuel are required.	OGPP permit holder and contract vessel operator; California State Lands Commission (CSLC) review of Final Monitoring Report.	Prior to, during, and after survey activities. Submit Final Monitoring Report after completion of survey activities.	
	Los Angeles and Orange Counties: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner; the survey shall be operated such that daily NO_x emissions do not exceed 100 pounds based on engine certification emission factors. This can be accomplished with Tier 2 engines if daily fuel use is 585 gallons or less, and with Tier 3 engines if daily fuel use is 935 gallons or less.		Verify that Tier 2 or cleaner engines are being used. Calculate daily NO_x emissions to verify compliance with limitations.			
	San Luis Obispo County: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner, accomplished with Tier 2 engines if daily fuel use is 585 gallons or less; all diesel equipment shall not idle for more than 5 minutes; engine use needed to maintain position in the water is not considered idling; diesel idling within 300 meters (1,000 feet) of sensitive receptors is not permitted; use alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane or biodiesel.		Verify that Tier 2 or cleaner engines are being used. Inform vessel operator(s) of idling limitation. Investigate availability of alternative fuels.			
	Santa Barbara County: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner, accomplished with Tier 2 engines if daily fuel use is 790 gallons or less.		Verify that Tier 2 or cleaner engines are being used. Investigate availability of alternative fuels.			
	Ventura County: Use alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane or biodiesel.		Investigate availability of alternative fuels.			

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-1: Marine Mammal and Sea Turtle Presence – Current Information.	All State waters; prior to commencement of survey operations, the geophysical operator shall: (1) contact the National Oceanic and Atmospheric Administration Long Beach office staff and local whale-watching operations and shall acquire information on the current composition and relative abundance of marine wildlife offshore, and (2) convey sightings data to the vessel operator and crew, survey party chief, and onboard Marine Wildlife Monitors (MWMs) prior to departure. This information will aid the MWMs by providing data on the approximate number and types of organisms that may be in the area.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Document contact with appropriate sources. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder; Inquiry to NOAA and local whale watching operators.	Prior to survey.	
MM BIO-2: Marine Wildlife Monitors (MWMs).	Except as provided in section 7(h) of the General Permit, a minimum of two (2) qualified MWMs who are experienced in marine wildlife observations shall be onboard the survey vessel throughout both transit and data collection activities. The specific monitoring, observation, and data collection responsibilities shall be identified in the Marine Wildlife Contingency Plan required as part of all Offshore Geophysical Permit Program permits. Qualifications of proposed MWMs shall be submitted to the National Oceanic and Atmospheric Administration (NOAA) and CSLC at least twenty-one (21) days in advance of the survey for their approval by the agencies. Survey operations shall not commence until the CSLC approves the MWMs.	Competent and professional monitoring or marine mammals and sea turtles; compliance with established monitoring policies.	Document contact with and approval by appropriate agencies. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	
MM BIO-3: Safety Zone Monitoring.	Onboard Marine Wildlife Monitors (MWMs) responsible for observations during vessel transit shall be responsible for monitoring during the survey equipment operations. All visual monitoring shall occur from the highest practical vantage point aboard the survey vessel; binoculars shall be used to observe the surrounding area, as appropriate. The MWMs will survey an area (i.e., safety or exclusion zone) based on the equipment used, centered on the sound source (i.e., vessel, towfish), throughout time that the survey equipment is operating. Safety zone radial distances, by equipment type, include:	No adverse effects to marine mammals or sea turtles due to survey activities are observed; compliance with established safety zones.	Compliance with permit requirements (observers); compliance with established safety zones. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	

<table>
<tr><th>Mitigation Measure (MM)</th><th>Location and Scope of Mitigation</th><th>Effectiveness Criteria</th><th>Monitoring or Reporting Action</th><th>Responsible Party</th><th>Timing</th><th>Implementation Date(s) and Initials</th></tr>
<tr><td></td><td>
<table>
<tr><th>Equipment Type</th><th>Safety Zone (radius, m)</th></tr>
<tr><td>Single Beam Echosounder</td><td>50</td></tr>
<tr><td>Multibeam Echosounder</td><td>500</td></tr>
<tr><td>Side-Scan Sonar</td><td>600</td></tr>
<tr><td>Subbottom Profiler</td><td>100</td></tr>
<tr><td>Boomer System</td><td>100</td></tr>
</table>

If the geophysical survey equipment is operated at or above a frequency of 200 kilohertz (kHz), safety zone monitoring and enforcement is not required; however, if geophysical survey equipment operated at a frequency at or above 200 kHz is used simultaneously with geophysical survey equipment less than 200 kHz, then the safety zone for the equipment less than 200 kHz must be monitored. The onboard MWMs shall have authority to stop operations if a mammal or turtle is observed within the specified safety zone and may be negatively affected by survey activities. The MWMs shall also have authority to recommend continuation (or cessation) of operations during periods of limited visibility (i.e., fog, rain) based on the observed abundance of marine wildlife. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the onboard MWMs. During operations, if an animal's actions are observed to be irregular, the monitor shall have authority to recommend that equipment be shut down until the animal moves further away from the sound source. If irregular behavior is observed, the equipment shall be shut-off and will be restarted and ramped-up to full power, as applicable, or will not be started until the animal(s) is/are outside of the safety zone or have not been observed for 15 minutes.

For nearshore survey operations utilizing vessels that lack the personnel capacity to hold two (2) MWMs aboard during survey operations, at least twenty-one (21) days prior to the commencement of survey activities, the Permittee may petition the CSLC to conduct survey operations with one (1) MWM aboard. The CSLC will consider such authorization on a case-by-case basis and</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
	factors the CSLC will consider will include the timing, type, and location of the survey, the size of the vessel, and the availability of alternate vessels for conducting the proposed survey. CSLC authorizations under this subsection will be limited to individual surveys and under any such authorization; the Permittee shall update the MWCP to reflect how survey operations will occur under the authorization.					
MM BIO-4: Limits on Nighttime OGPP Surveys.	All State waters; nighttime survey operations are prohibited under the OGPP, except as provided below. The CSLC will consider the use of single beam echosounders and passive equipment types at night on a case-by-case basis, taking into consideration the equipment specifications, location, timing, and duration of survey activity.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Presurvey request for nighttime operations, including equipment specifications and proposed use schedule. Document equipment use. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Approval required before survey is initiated. Monitoring Report following comple-tion of survey.	
MM BIO-5: Soft Start.	All State waters; the survey operator shall use a "soft start" technique at the beginning of survey activities each day (or following a shut down) to allow any marine mammal that may be in the immediate area to leave before the sound sources reach full energy. Surveys shall not commence at nighttime or when the safety zone cannot be effectively monitored. Operators shall initiate each piece of equipment at the lowest practical sound level, increasing output in such a manner as to increase in steps not exceeding approximately 6 decibels (dB) per 5-minute period. During ramp-up, the Marine Wildlife Monitors (MWMs) shall monitor the safety zone. If marine mammals are sighted within or about to enter the safety zone, a power-down or shut down shall be implemented as though the equipment was operating at full power. Initiation of ramp-up procedures from shut down requires that the MWMs be able to visually observe the full safety zone.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Compliance with permit requirements (observers); compliance with safe start procedures. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Imme-diately prior to survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-6: Practical Limitations on Equipment Use and Adherence to Equipment Manufacturer's Routine Maintenance Schedule.	All State waters; geophysical operators shall follow, to the maximum extent possible, the guidelines of Zykov (2013) as they pertain to the use of subbottom profilers and side-scan sonar, including: • Using the highest frequency band possible for the subbottom profiler; • Using the shortest possible pulse length; and • Lowering the pulse rate (pings per second) as much as feasible. Geophysical operators shall consider the potential applicability of these measures to other equipment types (e.g., boomer). Permit holders will conduct routine inspection and maintenance of acoustic-generating equipment to ensure that low energy geophysical equipment used during permitted survey activities remains in proper working order and within manufacturer's equipment specifications. Verification of the date and occurrence of such equipment inspection and maintenance shall be provided in the required presurvey notification to CSLC.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Document initial and during survey equipment settings. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Imme-diately prior to and during survey.	May 3, 2017
MM BIO-7: Avoidance of Pinniped Haul-Out Sites.	The Marine Wildlife Contingency Plan (MWCP) developed and implemented for each survey shall include identification of haul-out sites within or immediately adjacent to the proposed survey area. For surveys within 300 meters (m) of a haul-out site, the MWCP shall further require that: • The survey vessel shall not approach within 91 m of a haul-out site, consistent with National Marine Fisheries Service (NMFS) guidelines; • Survey activity close to haul-out sites shall be conducted in an expedited manner to minimize the potential for disturbance of pinnipeds on land; and • Marine Wildlife Monitors shall monitor pinniped activity onshore as the vessel approaches, observing and reporting on the number of pinnipeds potentially disturbed (e.g., via head lifting, flushing into the water). The purpose of such reporting is to provide CSLC and California Department of Fish and Wildlife (CDFW) with information regarding potential disturbance associated with OGPP surveys.	No adverse effects to pinnipeds at haul outs are observed.	Document pinniped reactions to vessel presence and equipment use. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Monitoring Report following comple-tion of survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-8: Reporting Requirements – Collision.	All State waters; if a collision with marine mammal or reptile occurs, the vessel operator shall document the conditions under which the accident occurred, including the following: • Vessel location (latitude, longitude) when the collision occurred; • Date and time of collision; • Speed and heading of the vessel at the time of collision; • Observation conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog) at the time of collision; • Species of marine wildlife contacted (if known); • Whether an observer was monitoring marine wildlife at the time of collision; and, • Name of vessel, vessel owner/operator, and captain officer in charge of the vessel at time of collision. After a collision, the vessel shall stop, if safe to do so; however, the vessel is not obligated to stand by and may proceed after confirming that it will not further damage the animal by doing so. The vessel will then immediately communicate by radio or telephone all details to the vessel's base of operations, and shall immediately report the incident. Consistent with Marine Mammal Protection Act requirements, the vessel's base of operations or, if an onboard telephone is available, the vessel captain him/herself, will then immediately call the National Oceanic and Atmospheric Administration (NOAA) Stranding Coordinator to report the collision and follow any subsequent instructions. From the report, the Stranding Coordinator will coordinate subsequent action, including enlisting the aid of marine mammal rescue organizations, if appropriate. From the vessel's base of operations, a telephone call will be placed to the Stranding Coordinator, NOAA National Marine Fisheries Service (NMFS), Southwest Region, Long Beach, to obtain instructions. Although NOAA has primary responsibility for marine mammals in both State and Federal waters, the California Department of Fish and Wildlife (CDFW) will also be advised that an incident has occurred in State waters affecting a protected species.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Monitoring Report following comple-tion of survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-9: Limitations on Survey Operations in Select Marine Protected Areas (MPAs).	All MPAs; prior to commencing survey activities, geophysical operators shall coordinate with the CLSC, California Department of Fish and Wildlife (CDFW), and any other appropriate permitting agency regarding proposed operations within MPAs. The scope and purpose of each survey proposed within a MPA shall be defined by the permit holder, and the applicability of the survey to the allowable MPA activities shall be delineated by the permit holder. If deemed necessary by CDFW, geophysical operators will pursue a scientific collecting permit, or other appropriate authorization, to secure approval to work within a MPA, and shall provide a copy of such authorization to the CSLC as part of the required presurvey notification to CSLC. CSLC, CDFW, and/or other permitting agencies may impose further restrictions on survey activities as conditions of approval.	No adverse effects to MPA resources due to survey activities are observed.	Monitor reactions of wildlife to survey operations; report on shutdown conditions and survey restart. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder; survey permitted by CDFW.	Prior to survey.	
MM HAZ-1: Oil Spill Contingency Plan (OSCP) Required Information.	Permittees shall develop and submit to CSLC staff for review and approval an OSCP that addresses accidental releases of petroleum and/or non-petroleum products during survey operations. Permittees' OSCPs shall include the following information for each vessel to be involved with the survey: • Specific steps to be taken in the event of a spill, including notification names, phone numbers, and locations of: (1) nearby emergency medical facilities, and (2) wildlife rescue/response organizations (e.g., Oiled Wildlife Care Network); • Description of crew training and equipment testing procedures; and • Description, quantities, and location of spill response equipment onboard the vessel.	Reduction in the potential for an accidental spill. Proper and timely response and notification of responsible parties in the event of a spill.	Documentation of proper spill training. Notification of responsible parties in the event of a spill.	OGPP permit holder and contract vessel operator.	Prior to survey.	
MM HAZ-2: Vessel fueling restrictions.	Vessel fueling shall only occur at an approved docking facility. No cross vessel fueling shall be allowed.	Reduction in the potential for an accidental spill.	Documentation of fueling activities.	Contract vessel operator.	Following survey.	
MM HAZ-3: OSCP equipment and supplies.	Onboard spill response equipment and supplies shall be sufficient to contain and recover the worst-case scenario spill of petroleum products as outlined in the OSCP.	Proper and timely response in the event of a spill.	Notification to CSLC of onboard spill response equipment/supplies inventory, verify	Contract vessel operator.	Prior to survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
			ability to respond to worst-case spill.			
MM HAZ-1: Oil Spill Contingency Plan (OSCP) Required Information.	Outlined under **Hazards and Hazardous Materials** (above)					
MM HAZ-2: Vessel fueling restrictions.	Outlined under **Hazards and Hazardous Materials** (above)					
MM HAZ-3: OSCP equipment and supplies.	Outlined under **Hazards and Hazardous Materials** (above)					
MM BIO-9: Limitations on Survey Operations in Select MPAs.	Outlined under **Biological Resources** (above)					
MM REC-1: U.S. Coast Guard (USCG), Harbormaster, and Dive Shop Operator Notification.	All California waters where recreational diving may occur; as a survey permit condition, the CSLC shall require Permittees to provide the USCG with survey details, including information on vessel types, survey locations, times, contact information, and other details of activities that may pose a hazard to divers so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas. Furthermore, at least twenty-one (21) days in advance of in-water activities, Permittees shall: (1) post such notices in the harbormasters' offices of regional harbors; and (2) notify operators of dive shops in coastal locations adjacent to the proposed offshore survey operations.	No adverse effects to recreational divers from survey operations.	Notify the USCG, local harbormasters, and local dive shops of planned survey activity. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM FISH-1: U.S. Coast Guard (USCG) and Harbormaster Notification.	All California waters; as a survey permit condition, the CSLC shall require Permittees to provide the USCG with survey details, including information on vessel types, survey locations, times, contact information, and other details of activities that may pose a hazard to mariners and fishers so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas. Furthermore, at least twenty-one (21) days in advance of in-water activities, Permittees shall post such notices in the harbormasters' offices of regional harbors.	No adverse effects to commercial fishing gear in place.	Notify the USCG and local harbormasters of planned survey activity. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	
MM FISH-2: Minimize Interaction with Fishing Gear.	To minimize interaction with fishing gear that may be present within a survey area: (1) the geophysical vessel (or designated vessel) shall traverse the proposed survey corridor prior to commencing survey operations to note and record the presence, type, and location of deployed fishing gear (i.e., buoys); (2) no survey lines within 30 m (100 feet) of observed fishing gear shall be conducted. The survey crew shall not remove or relocate any fishing gear; removal or relocation shall only be accomplished by the owner of the gear upon notification by the survey operator of the potential conflict.	No adverse effects to commercial fishing gear in place.	Visually observe the survey area for commercial fishing gear. Notify the gear owner and request relocation of gear outside survey area. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Imme-diately prior to survey (prior to each survey day).	
MM FISH-1: USCG and Harbormaster Notification.	Outlined under **Commercial and Recreational Fisheries** (above)					

Acronyms/Abbreviations: CARB = California Air Resources Board; CDFW = California Department of Fish and Wildlife; CSLC = California State Lands Commission; dB = decibels; kHz = kilohertz; MPA = Marine Protected Area; MWCP = Marine Wildlife Contingency Plan; MWM = Marine Wildlife Monitor; m= meter(s); NOAA = National Oceanic and Atmospheric Administration; NO_x = Nitrogen Oxide; OGPP = Offshore Geophysical Permit Program; OSCP = Oil Spill Contingency Plan; USCG = U.S. Coast Guard